Datasheet

Scientific-Grade Mini Spectrometer Sensor ATP6530

Features

- Integration Time: 6 ms to 65s
- Deep-Cooled Back-Illuminated CCD (Minimum -15°C)
- Detector Pixels: 1024 x 64
- Ultra-Low Noise CCD Signal Processing Circuit
- Ultra-Low Etalon Effect
- Ultra-High Dynamic Range, Ultra-High SNR
- Spectral Range: 180–1100 nm (customizable within this range)
- Spectral Resolution: 0.1–3 nm (depending on spectral range and slit width)
- Optical Path Structure: M-Type Optical Path
- Power Supply: DC 5V ± 10% @ <3A
- 18-bit Depth (16-bit Output)
- Optical Input Interface: Fiber Optic Input or Free Space Input
- Data Output Interface: USB 2.0 or UART
- 20-Pin Dual-Row Programmable Expansion Interface

Application

- Scientific Research
- Biological Fluorescence Detection
- Weak (Biological) Fluorescence Detection
- Transmittance and Reflectance Detection
- Raman Spectroscopy

Description

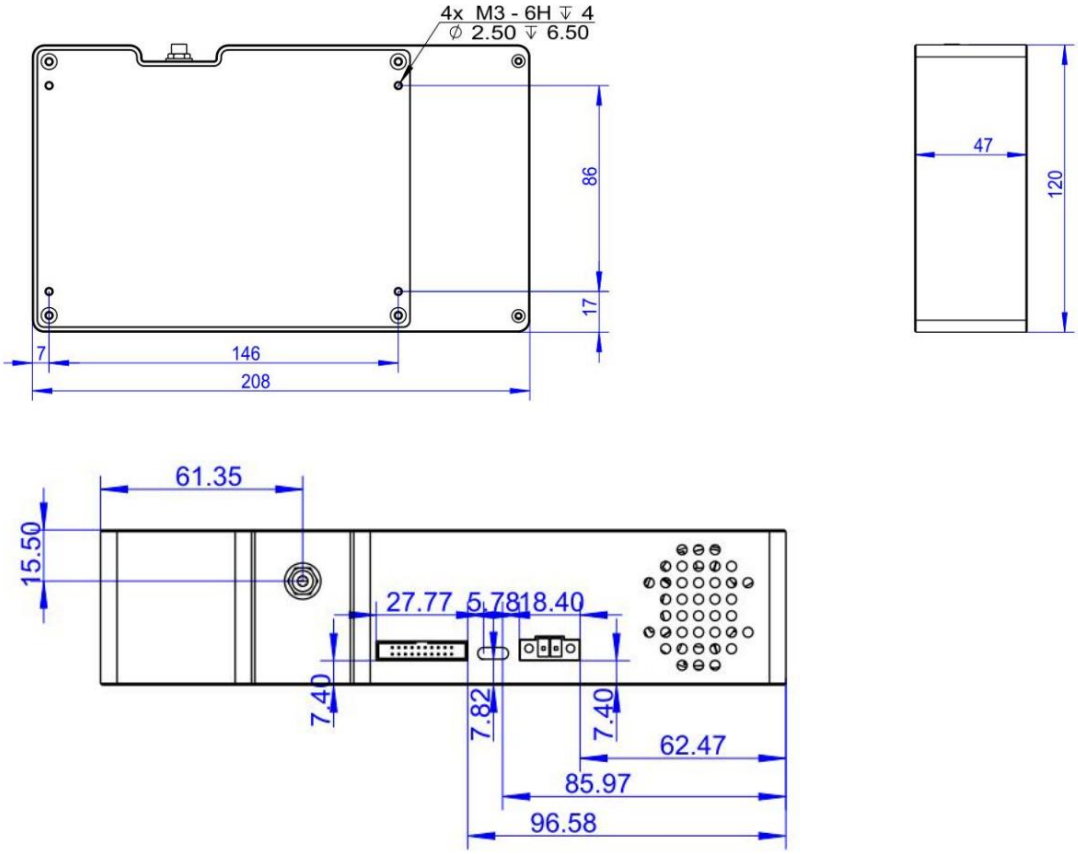
The ATP6530 is an ultra-high-performance cooled fiber optic spectrometer developed by Optosky, featuring the company's proprietary M-Type optical path structure for exceptional ultra-high resolution. Equipped with a thermoelectrically cooled back-illuminated linear CCD, it offers an extensive dynamic range. Its semiconductor cooling technology significantly reduces dark current during operation, allowing the CCD to maintain a stable temperature as low as -15ºC. This stability minimizes sensor noise, delivering an outstanding signal-to-noise ratio (SNR) approximately twice as high as competing models and ensuring high measurement reliability that remains unaffected by environmental temperature changes.

To optimize performance, Optosky has custom-designed an ultra-low-noise CCD signal processing circuit specifically for the ATP6530, achieving industry-leading quantization noise of less than 3 counts. The ATP6530 supports SMA905 fiber optic or free-space light input, with spectral data output available via USB2.0 or UART ports. With just a 5V DC power requirement, the ATP6530 is exceptionally easy to integrate into a wide range of applications.

1. Parameter

Detector	
Type	Back-illuminated CCD sensor (cooled down to -15°C)
Detection spectral range	190-1100 nm
Effective pixels	1024 x 64
Pixel size	24μm × 24μm
Full range	600 ke$^-$
Sensitivity	6.5 uV/e-
Dark noise	8 e
Optical parameters	
Wavelength range	190-1100 nm
Optimal optical resolution	0.1 - 3 nm (depending on the slit and spectral range)
Signal-to-noise ratio	>1000:1
Dynamic range	20000:1
Optical design	M-type optical path
Focal length	127 mm
Entrance slit width	5、10、25、50、100、150、200 μm Optional, other sizes can be customized
Incident light interface	SMA905 Fiber optic interface, free space
Electrical parameters	
Integration time	6ms ~ 65s
Data output interface	USB 2.0 or UART
ADC bit depth	18 bit（Output 16bit）
Power supply	DC 5V±10%
Operating current	<3 A
Operating temperature	-15 - 45 ^{o}C
Operating humidity	< 90%RH
Physical parameters	
Dimensions	199×125×85 mm^3
Weight	1.2kg

2. Dimensions



3. Accessories

Standard Accessories	
1	Type-C to USB Data Cable
2	5V Power Adapter
Optional Accessories	
1	UV-Visible Fiber Optic Cable
2	Spectral Analysis Sample Holder (Disc-shaped)
3	Standard Diffuse Reflectance Whiteboard
4	Transmission/Reflectance Measurement Integrating Sphere Stand